

Cells and Cell Processes Drawing Cells under the Microscope Task

Teacher Directions

DP Manipulative skills

In this task students are asked to draw cells as observed under a light microscope. The correct use of microscopes and the skills of making biological drawings are important laboratory skills and techniques for any inquiry into biology. In addition to the important data recording skills of making biological drawings and technique skills of using a light microscope, an interesting discussion of the relationship of developments in technology to the history of biology would be useful and engaging. In the DP program students are required in Theory of Knowledge classes to examine the questions:

What do I know?

How do I know that I know that?

What are the strengths and limitations of that knowledge?

The improvements in imaging technology and the breakthroughs in cell theory and cytology are an interesting place to ask these questions. What would medicine be if we did not have the ability to "see" microscopic lifeforms? Would we have Germ Theory?

Please provide students with rules for biological diagrams. A handout with these rules is included on this website.

In order to assess Manipulative skills it may be useful to use the rubric below:

Manipulative skills (assessed summatively)

This criterion addresses objective 5.

Levels/marks	Aspect 1	Aspect 2	Aspect 3
	Following instructions*	Carrying out techniques	Working safely
Complete/2	Follows instructions accurately, adapting to new circumstances (seeking assistance when required).	Competent and methodical in the use of a range of techniques and equipment.	Pays attention to safety issues.
Partial/1	Follows instructions but requires assistance.	Usually competent and methodical in the use of a range of techniques and equipment.	Usually pays attention to safety issues.
Not at all/0	Rarely follows instructions or requires constant supervision.	Rarely competent and methodical in the use of a range of techniques and equipment.	Rarely pays attention to safety issues.

Student directions

In the lab, you are going to have the opportunity to observe cells through a light microscope. You will draw a labeled diagram of the cell(s) you observe and label those structures visible at the highest level of magnification where the whole cell is still visible in the field of view. For the cell you draw, you must record the magnification of viewing, an estimate of size and a calculation of the magnification of the drawing. For the cell structures that are visible to you under the microscope you must also estimate the size.

Guidelines for Biological Drawings are attached here

Biological Drawings Student Guide**Support material****Markschemes/marking notes:**

Diagram should include:

- magnification of viewing
- size estimate
- calculation of the magnification of the drawing (size estimate/size in diagram X 100)
- possible labels: nucleus, nucleolus, cell membrane (animal cells only), for plants only: cell wall, chloroplasts and possibly large water vacuole depending upon specimen viewed.

Diagram should follow rules for drawings with which students should have been provided.

Subject:

Biology

DP Component & Criteria:

D. Manipulative Skills

Component type:

Internal

MYP Criteria:

Group 4 / Sciences